What Is Claimed Is:

1. A method of direct memory access control, comprising:

    receiving a command to initiate data transfer between a first device and a

        second device;

    responsive to the command received, determining a channel capable of

        facilitating the data transfer;

    determining a mode indicating a manner in which to activate the channel;

        and

    enabling the data transfer to be performed using the channel and based on

        the mode determined.

2. The method according to Claim 1, wherein the one of the first device and the

second device comprises a memory device.

3. The method according to Claim 1, further comprising:

    receiving a signal indicating a last transfer associated with the data

        transfer; and

    in response, transmitting a signal acknowledging completion of the data

        transfer.

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1   4. The method according to Claim 1, wherein determining a mode indicating a

2   manner in which to activate the channel comprises:

3   selecting the mode from one of a group of operation modes comprising a

4   fixed length single burst mode, a chaining mode, an auto-rollback

5   mode, virtual channel mode, and a multiple-segment mode.

1   5. The method according to Claim 1, wherein determining a mode indicating a

2   manner in which to activate the channel comprises:

3   selecting the mode from one of a group of access modes comprising

4   READ and WRITE modes.

1   6. The method according to Claim 1, further comprising:

2   determining a base address representing a starting address of the data

3   transfer.

1   7. The method according to Claim 6, further comprising:

2   selecting a starting address of a subsequent data transfer to be the base

3   address.

1   8. The method according to Claim 6, further comprising:

2   selecting a starting address of a subsequent data transfer to be an address

3   that is continuous with an ending address of a previous data

4   transfer.

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1   9. The method according to Claim 6, further comprising:

2   determining an ending address contiguous to the starting address; and

3   automatically rolling the ending address to the starting address when the

4   data transfer exceeds the ending address.

1   10. The method according to Claim 1, further comprising:

2   determining a segment count indicator and a segment spacing indicator

3   from the operational characteristics, wherein the data transfer

4   comprises data transfer of a plurality of data segments.

1   11. The method according to Claim 10, further comprising:

2   determining a base address representing a starting address of a first data

3   segment;

4   selecting a starting address of a subsequent data segment to be an address

5   determined from the base address offset based on the segment

6   count indicator and the segment spacing indicator.

1   12. A method of selectably enabling a plurality of data transfer modes along one

2   or more channels, comprising:

3   loading predetermined configuration data from an external device, the

4   predetermined configuration data including the plurality of data

5   transfer modes and the channels facilitating the data transfer;

6   receiving a command to initiate the data transfer between a source device

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7   and a destination device;

8   responsive to the command received, selecting a corresponding channel

9   from the channels and a corresponding mode from the plurality of

10   data transfer modes; and

11   enabling data transfer between the source device and the destination

12   device based on the corresponding channel and the corresponding

13   mode.

1   13. The method according to Claim 12, wherein selecting a corresponding mode

2   from the plurality of data transfer modes comprises:

3   selecting the corresponding mode to be one from a group of operation

4   modes comprising a fixed length single burst mode, a chaining

5   mode, an auto-rollback mode, virtual channel mode, and a

6   multiple-segment mode.

1   14. The method according to Claim 12, wherein selecting a corresponding mode

2   from the plurality of data transfer modes comprises:

3   selecting the corresponding mode to be one from a group of access modes

4   comprising READ and WRITE modes.

1   15. The method according to Claim 12, wherein one of the source device and the

2   destination device comprises a memory device.

1   16. The method according to Claim 12, wherein enabling data transfer between

2   the source device and the destination device based on the corresponding channel and the

3   corresponding mode comprises:

4   enabling the source device to read data from the destination device.

1   17. The method according to Claim 12, wherein enabling data transfer between

2   the source device and the destination device based on the corresponding channel and the

3   corresponding mode comprises:

4   enabling the source device to write data to the destination device.

1   18. A method of controlling data transfer between a first device and a second

2   device, comprising:

3   receiving a command to initiate the data transfer;

4   extracting configuration data from the command to load a configuration

5   engine and to index operational characteristics associated with the

6   data transfer, the configuration engine being capable of storing the

7   operational characteristics;

8   selecting from the operational characteristics a channel facilitating the data

9   transfer between the first device and the second device, and an

10   operation mode associated with the data transfer;

11   receiving at least one signal indicating that the data transfer is ready to be

12   undertaken; and

13   enabling activation of the channel; and

14   enabling the data transfer using the operation mode selected.

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19. The method according to Claim 18, further comprising:

    receiving a signal indicating a last transfer associated with the data

        transfer; and

    in response, transmitting a signal acknowledging completion of the data

        transfer.

20. The method according to Claim 18, wherein the second device is memory device.

21. The method according to Claim 20, wherein receiving at least one signal indicating that the data transfer is ready to be undertaken comprises:

    receiving a request from the first device to READ data from the memory

        device.

22. The method according to Claim 20, wherein receiving at least one signal indicating that the data transfer is ready to be undertaken comprises:

    receiving a request from the first device to WRITE data to the memory

        device.

23. The method according to Claim 18, further comprising:

    determining a base address representing a starting address of the data

        transfer.

24. The method according to Claim 23, wherein enabling the data transfer using

2 the operation mode selected comprises:

3   selecting a starting address of a subsequent data transfer to be the base

4   address.

1   25. The method according to Claim 23, wherein enabling the data transfer using

2 the operation mode selected comprises:

3   selecting a starting address of a subsequent data transfer to be an address

4   that is continuous with an ending address of a previous data

5   transfer.

1   26. The method according to Claim 23, wherein enabling the data transfer using

2 the operation mode selected comprises:

3   determining an ending address contiguous to the starting address; and

4   automatically rolling the ending address to the starting address when the

5   data transfer exceeds the ending address.

1   27. The method according to Claim 18, further comprising:

2   determining a segment count indicator and a segment spacing indicator

3   from the operational characteristics, wherein the data transfer

4   comprises data transfer of a plurality of data segments.

1   28. The method according to Claim 27, wherein enabling the data transfer using

2 the operation mode selected comprises:

3   determining a base address representing a starting address of a first data

4   segment;

5   selecting a starting address of a subsequent data segment to be an address

6   determined from the base address offset based on the segment

7   count indicator and the segment spacing indicator.

1   29. The method according to Claim 18, wherein receiving at least one signal

2   indicating that the data transfer is ready to be undertaken comprises:

3   receiving a request from the first device to READ data from the second

4   device; and

5   receiving a request from the second device to WRITE data to the first

6   device.

1   30. The method according to Claim 29, wherein the operation mode comprises a

2   virtual channel data transfer mode, and wherein enabling the data transfer using the

3   operation mode selected comprises:

4   sending an acknowledge signal to each of the first device and the second

5   device; and

6   enabling the data transfer to be performed directly between the first device

7   and the second device.

1   31. A system, comprising:

2   a source device communicatively coupled to a destination device; and

3   coupled to the source and destination devices, means for selectively

4   enabling multiple channel data transfer modes between the source

5   device and the destination device,

6   wherein a data transfer mode is selected from a group of the multiple

7   channel data transfer modes comprising fixed length single burst

8   mode, a chaining mode, an auto-rollback mode, a virtual channel

9   mode, and a multiple-segment mode.

1   32. The system according to Claim 31, wherein the means for selectively

2   enabling multiple channel data transfer operation modes between the source device and

3   the destination device comprises:

4   bus interface unit means for buffering bus signals between the source and

5   destination devices, the bus interface unit means being coupled to

6   the source and destination devices;

7   coupled to the bus interface unit means, memory means for storing

8   configuration data representing the multiple channel data transfer

9   operation modes; and

10   coupled to the memory means, engine means for selecting from the

11   memory means a corresponding operation mode and access mode

12   for the data transfer.

1   33. The system according to Claim 31, wherein the means for selectively

2   enabling multiple channel data transfer operation modes between the source device and

3   the destination device further comprises:

4   a processor coupled to a bus and interrupt controller, the bus and interrupt

5   controller being communicatively coupled to the bus interface unit

6   means; and

7   scheduler means coupled to the source and destination devices.

1   34. A video processing system for selectably enabling a plurality of data transfer

2 modes along one or more channels communicatively coupling together a first device and

3 a second device, comprising:

4   the first device communicatively coupled to second device; and

5   a direct memory access controller controlling data transfer between the

6   first and second devices, the direct memory access controller

7   coupled to the first and second devices, wherein the direct memory

8   access controller includes a configuration storage element having:

9   a multiple segment indicator;

10   a base request indicator;

11   a base count indicator; and

12   mode indicator.

1   35. A computer program product for controlling data transfer between a first

2 device and a second device, the computer program product stored on a computer readable

3 medium, and adapted to perform operations of:

4   allowing receipt of a command to initiate the data transfer;

5   allowing configuration data to be extracted from the command to load a

6   configuration engine and to index operational characteristics

7   associated with the data transfer, the configuration engine being

8   capable of storing the operational characteristics;

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9   enabling selection from the operational characteristics of a channel

10   facilitating the data transfer between the first device and the second

11   device, and an operation mode associated with the data transfer;

12   allowing receipt of at least one signal indicating that the data transfer is

13   ready to be undertaken; and

14   enabling activation of the channel; and

15   enabling the data transfer using the operation mode selected.

1   36. A computer program product for selectably enabling a plurality of data

2   transfer modes along one or more channels, the computer program product stored on a

3   computer readable medium, and adapted to perform operations of:

4   allowing predetermined configuration data to be loaded from an external

5   device, the predetermined configuration data including the

6   plurality of data transfer modes and the channels facilitating the

7   data transfer;

8   enabling receipt of a command to initiate the data transfer between a

9   source device and a destination device;

10   responsive to the command received, enabling selection of a

11   corresponding channel from the channels and a corresponding

12   mode from the plurality of data transfer modes; and

13   enabling data transfer between the source device and the destination

14   device based on the corresponding channel and the corresponding

15   mode.

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37. A computer program product for direct memory access control, the computer

program product stored on a computer readable medium, and adapted to perform

operations of:

        allowing receipt of a command to initiate data transfer between a first

            device and a second device;

        responsive to the command received, enabling determination to be made

            of a channel capable of facilitating the data transfer;

        enabling determination of a mode indicating a manner in which to activate

            the channel; and

        enabling the data transfer to be performed using the channel and based on

            the mode determined.

38. A method of controlling data transfer between a first device and a second

device, comprising:

        allowing receipt of a command to initiate the data transfer;

        enabling configuration data to be extracted from the command to load a

            configuration engine and to index operational characteristics

            associated with the data transfer, the configuration engine being

            capable of storing the operational characteristics;

        allowing a channel to be selected from the operational characteristics, the

            channel facilitating the data transfer between the first device and

            the second device, and an operation mode associated with the data

            transfer;

12   allowing receipt of at least one signal indicating that the data transfer is

13   ready to be undertaken; and

14   enabling activation of the channel; and

15   enabling the data transfer using the operation mode selected.

1   39. The method according to Claim 38, further comprising:

2   allowing receipt of a signal indicating a last transfer associated with the

3   data transfer; and

4   in response, enabling transmission of a signal acknowledging completion

5   of the data transfer.